

In the claims:

1. (Currently amended) A method of digitally watermarking visual media comprising:

passing a reference image and a watermarked image through a model of an output device to produce a modeled reference image and a modeled watermarked image, the reference image comprising a version of the watermarked image prior to being watermarked to form the watermarked image;

passing the [~~output of the model of the output device~~] modeled reference image and the modeled watermarked image to a visual quality metric that computes a measure of visual quality of the modeled watermarked image based on a visual quality analysis of the modeled watermarked image relative to the modeled watermarked image; and

using the output of the quality metric to adjust watermark embedding to achieve a desired visual quality in a watermarked image.

2. (Original) The method of claim 1 wherein the visual media comprises an image to be printed and the model is a model of a printing process.

3. (Original) The method of claim 1 wherein the visual media comprises video to be displayed and the model is a model of a display device.

4. (Original) The method of claim 1 including:  
applying the model of the output device and visual quality metric iteratively to adjust the watermark embedding.

5. (Original) The method of claim 1 wherein the visual quality metric is used to produce a visibility map, and the visibility map is input to the watermark embedding to adjust areas of the digital watermark so as to compensate for an effect of the output device on visual quality of the watermarked image.

6. (Original) The method of claim 1 wherein the visual quality metric evaluates a watermarked image relative to an original un-watermarked image to identify areas in the watermarked image where an embedded digital watermark is more or less visible.

7. (Currently amended) A computer readable storage medium on which is stored instructions for performing a method of digitally watermarking visual media, the method comprising:

passing a reference image and a watermarked image through a model of an output device to produce a modeled reference image and a modeled watermarked image, the reference image comprising a version of the watermarked image prior to being watermarked to form the watermarked image;

passing the ~~[output of the model of the output device]~~ modeled reference image and the modeled watermarked image to a visual quality metric that computes a measure of visual quality of the modeled watermarked image based on a visual quality analysis of the modeled watermarked image relative to the modeled watermarked image; and

using the output of the quality metric to adjust watermark embedding to achieve a desired visual quality in a watermarked image.

8. (Original) A method of digitally watermarking a signal comprising:

passing a reference signal and a watermarked signal through a model of an output device to produce a modeled reference signal and a modeled watermarked signal, the reference signal comprising a version of the watermarked signal prior to being watermarked to form the watermarked signal;

passing the ~~[output of the model of the output device]~~ modeled reference signal and the modeled watermarked signal to a perceptual quality metric that computes a measure of perceptual quality of the modeled watermarked signal based on a perceptual quality analysis of the modeled watermarked signal relative to the modeled watermarked signal; and

using the output of the quality metric to adjust watermark embedding to achieve a desired perceptual quality in a watermarked signal.

9. (Original) The method of claim 8 wherein the model of the output device models an effect of an audio rendering process.

10. (Original) The method of claim 8 wherein the model of the output device models an effect of a video rendering process.

11. (Original) The method of claim 8 wherein the model of the output device models an effect of a printing process.

12. (Original) The method of claim 8 wherein the output of the quality metric is used to adjust strength of digital watermark embedding in areas of the watermarked signal where the perceptual quality metric determines that a digital watermark is more or less perceptible than desired.

13. (Original) The method of claim 12 wherein the adjusting is performed by providing output from the quality metric to input of a digital watermark embedding process.

14. (Original) The method of claim 13 including providing output from the quality metric to the digital watermark embedding process in a visibility map used to adjust strength of digital watermark embedding in areas of the signal.

15. (Original) The method of claim 12 wherein the adjusting is performed iteratively by repeatedly applying the model of the output device and the quality metric to watermarked signals and using output of the quality metric to adjust the watermark embedding until a desired perceptual quality of the watermarked signal is attained.

16. (Currently amended) A computer readable storage medium on which is stored instructions for performing a method of digitally watermarking a signal, the method comprising:

passing a reference signal and a watermarked signal through a model of an output device to produce a modeled reference signal and a modeled watermarked signal, the reference signal comprising a version of the watermarked signal prior to being watermarked to form the watermarked signal;

passing the ~~[output of the model of the output device]~~ modeled reference signal and the modeled watermarked signal to a perceptual quality metric that computes a measure of perceptual quality of the modeled watermarked signal based on a perceptual quality analysis of the modeled watermarked signal relative to the modeled watermarked signal; and

using the output of the quality metric to adjust watermark embedding to achieve a desired perceptual quality in a watermarked signal.